March 21, 1934

R - LS
Fp-3

MEMORANDUM:

I am enclosing a summary sheet for 1932 and 1933 plantations. The thing is fairly complete except one plantation which I have designated "Plantation 19" and is not included. It is really a combination of small various lots of Norway pine, jack pine, Scotch pine, and others and I have not as yet worked these up. I had the C.W.A. girls omit it because it is such a mixture of lots. The data here given is picked off of summaries made by the C.W.A. help in Bates' office. I have not checked any of it, but I think it is essentially correct because the computations were easy and there always was a cross check on totals of the various designations (C, T, F, D, M) on which the girls could check themselves.

I have not worked up percentages on the 1931 plantations, the totals are given in the enclosed summaries and if Zon wants the 1931 survivals you could run off the whole thing on a slide rule in short order. I do not have here at La Crosse the <u>total number of trees of each species</u> that Rudolf planted. You can get these in my desk from a short (6 or 8 pages) type written memorandum that Paul made of his 1931 plantings in case you work out percentages.

Please have 4 or 5 carbons made of the large summary table I am enclosing.

As to our other field planting and plans for spring 1934. Last fall we prepared about 75,000 scalps with C.C.C. help ready for this spring s planting. Since I have only about 20,000 trees suitable for planting lined up (14,000 in our nursery at Denbigh) and we will have to do a lot of seed spotting directly in the field with bur oak, jack oak, hackberry, green ash, etc. We also will try about 8,000 cuttings of cottonwood and 4,000 willow in the field if moisture conditions of the soil appear to be good enough to get rooting.

Stock on hand at Denbigh suitable for spring 1934 field planting:

Norway pine	3,050
Scotch pine	1,790
Bull pine	4,710
Jack pine	40
White spruce	4,520
	14,110

Am getting 3,000 Black Hills spruce and 3,000 Red Cedar from Cashman Nursery Company at Owatonna. May get 2,000 large 2-2 Scotch pine from Halsey if plant quarantine will allow.

We did some planting about September 18, 1933 of 4,500 trees of Bull, Norway and Scotch pine and white spruce and they looked fairly good even about November 15. We may get some clue from these as to whether fall planting has <u>any</u> possibilities at all.

Last spring we put in 42 seed beds 4 x 12' of various species and this spring will put in about 60 and possibly more.

Our spring 1933 seed beds were uniformly successful as to the stand produced. The seedlings, however, were all rather puny, indicating a lack of the necessary plant food elements.

Consequently, on our nursery addition of about an acre, we plowed and disked the sod thoroughly, added some 50 tons of sheep manure (which is available for the hauling) and sowed a crop of yellow field peas which formed a very good stand and were plowed under in fall. Some of our area was left unfertilized for we will need some area on which to grow seedlings to compare with fertilized stock.

This coming year the plan is to conduct work along the following lines:

1. Effect of density of sowing on field survival.

2. Use of fertilizer buried at different depths in the soil.

3. H_2SO_4 vs. aluminum sulphate as a method of checking damping off.
   (A small experiment we ran in spring 1933 indicated that acidification of the soil was unnecessary as far as checking damping off was concerned.)

4. Effect of heaviness of watering (may tackle this).

5. Use of arsenic to check grub damage.
   (Have had a few beds of 1-0 stock damaged by grubs last year. Of about 8 species in our beds, grubs tackled only Norway pine. Whether this indicates a preference for a certain species or not is hard to tell. Will know more by next fall.)

6. Origin of seed - naturally, one of our most important factors.

7. Effect of cultivation on growth and survival (We weeded and cultivated 80 acres with C.C.C. last fall.)

8. Small vs. large scalps. Diameter range 8 to 24".

9. Possibility of direct seeding in the field.

10. Value of an overstory of aspen. (We thinned out dense clumps of aspen to allow about 50 per cent canopy and plan to underplant.) May give some idea as to possibility of a hardwood nurse crop for conifers.

11. Value of summer fallow of furrows (may tackle this).

12. Reducing transpiration of planting stock by cutting away part of foliage. Also use of oil sprays of certain kinds. Theoretically reduction of transpiration surface should increase field survival at least for a few years.

13. Various seed pretreatment to get first year germination of juniper seed.

The above list is not entirely complete but should give some idea of what we plan on doing.

Next fall our seed collection efforts will be redoubled to get a wide representation of various sources of seed of the same species. It is desirable that we get more data, particularly on bull pine, as to origin of seed and its importance.

I hope this general summary indicates in a general way what we are doing at Denbigh.

Very sincerely

J.H.Stoeckeler

Put "1933 Survival Count of 1931 Plantations" in my desk when you're through with it.